

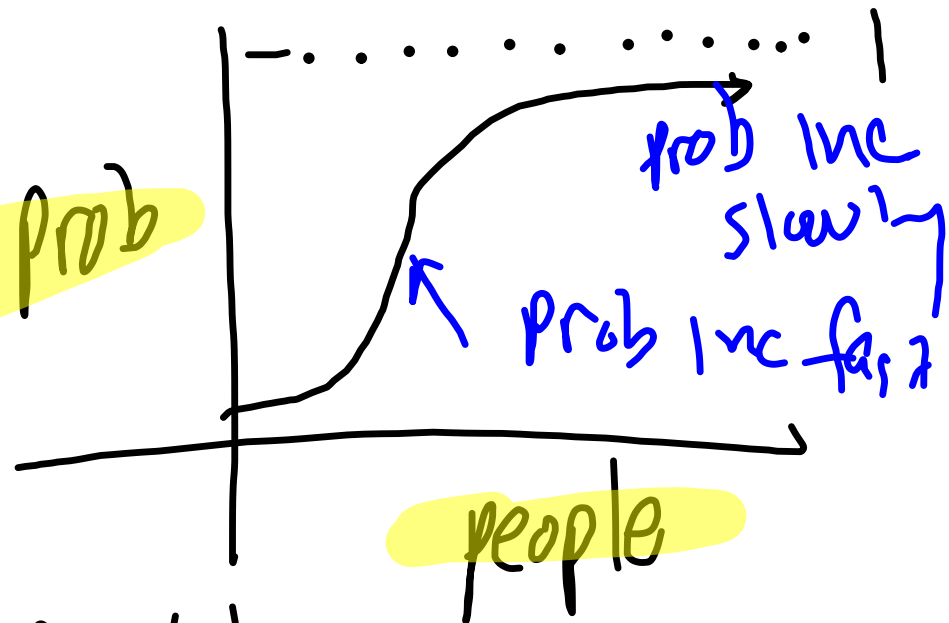
3.1 more on derivative

ex 5 birthday problem

people	prob
0	0
5	.027
10	.117
15	.253
20	.411
25	.569
.	.
.	.
.	.

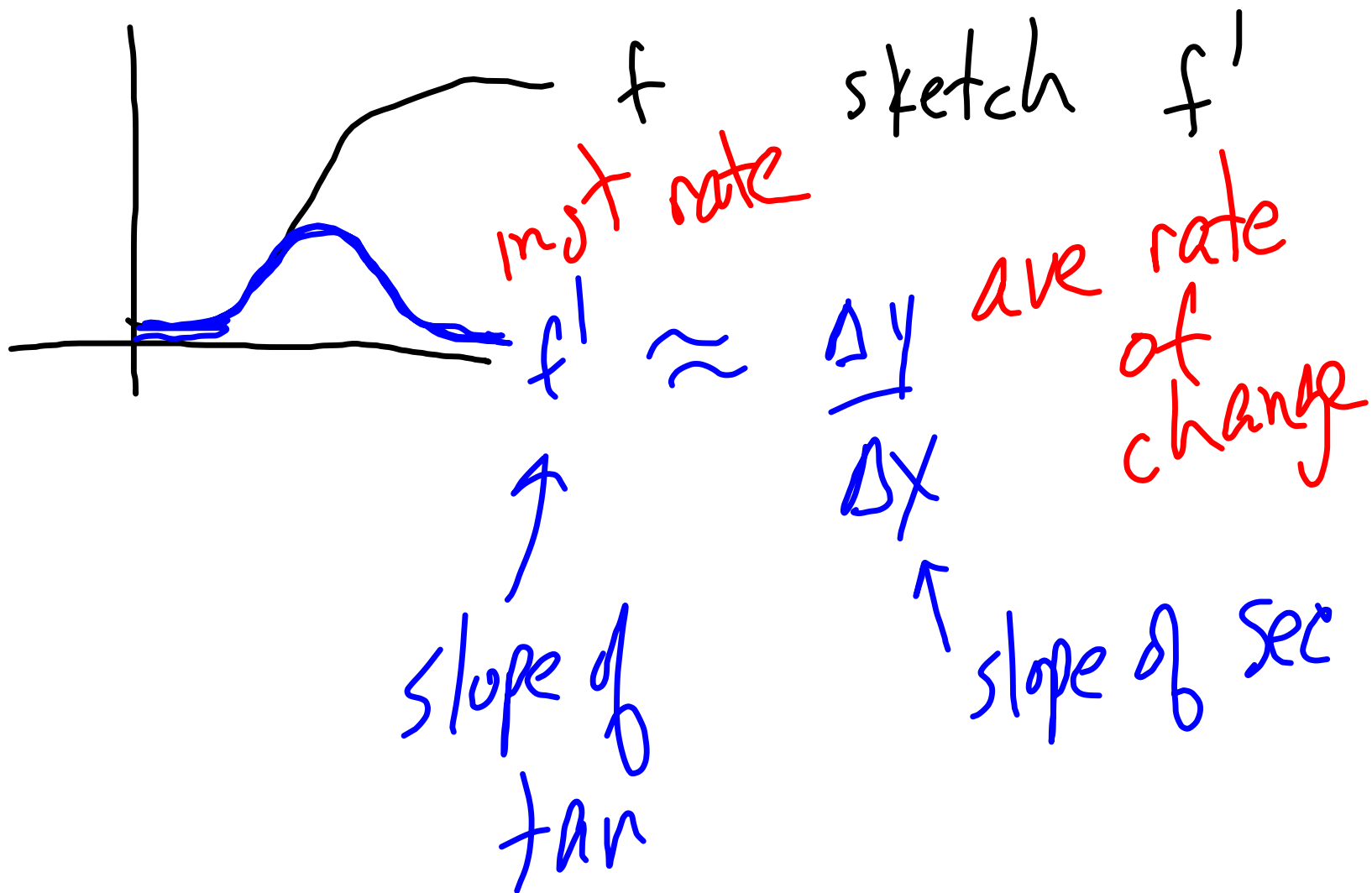
list & spreadsheet

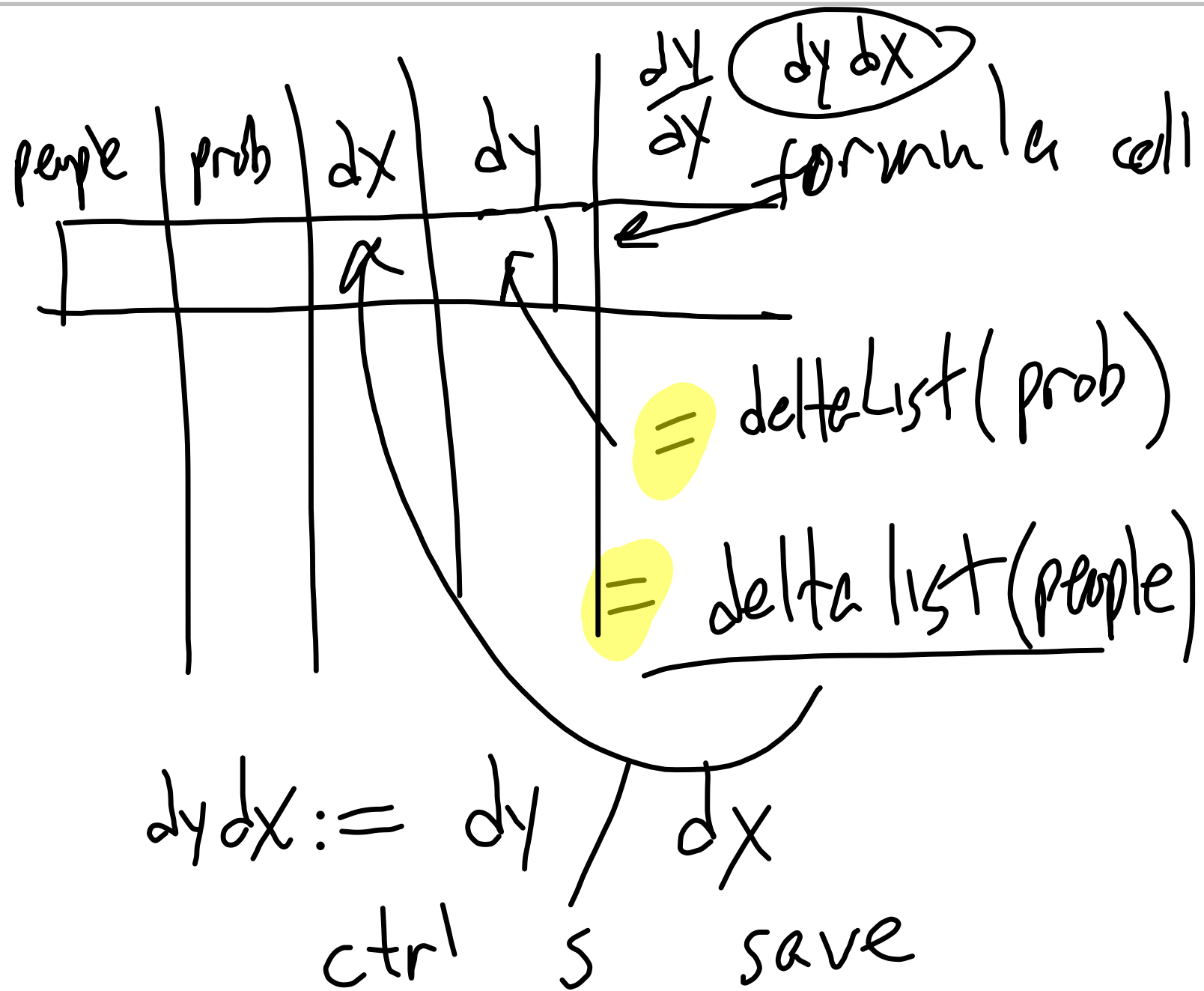
data & statistics



$$\lim_{x \rightarrow \infty} f(x) = 1$$

$$HA \quad y=1$$





def. of $f'(x) = \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$

find $f'(2)$ $f(x) = \frac{3}{x}$

slope of tan line at $x_1 = 2$ $y_1 = \frac{3}{2}$
(derivative)

$x_2 = 2+h$ $y_2 = \frac{3}{2+h}$

$$\lim_{h \rightarrow 0} \frac{\frac{3}{2+h} - \frac{3}{2}}{h} = \lim_{h \rightarrow 0} \left[\frac{6 - 3(2+h)}{2(2+h)} \right]$$

$$= \lim_{h \rightarrow 0} \frac{6 - 6 - 3h}{2(2+h)} \cdot \frac{1}{h}$$

$$7. \quad \lim_{h \rightarrow 0} \frac{\sqrt{4+h} - 2}{h}$$

mult top
& bottom
by conjugate

$$\lim_{h \rightarrow 0} \frac{(\sqrt{4+h} - 2)(\sqrt{4+h} + 2)}{h(\sqrt{4+h} + 2)}$$